ABSTRACT

When a nozzle 21 with a stepwise cross-section, which is provided with a small cross-sectional nozzle portion 21a formed on the front side thereof and with a large cross-sectional nozzle portion 21b formed on the rear side thereof in a discharge direction, respectively, is formed by applying etching to a silicon wafer 200 for forming a nozzle plate 2, a resist film 210 is formed on a surface 200a of the silicon wafer 200, and patterning by half-etching and patterning by full-etching is applied to the resist film 210. Next, anisotropic-dry-etching is applied to the silicon wafer 200 by ICP discharge, thereby forming grooves at the full-etched portions. Next, the resist film at the half-etched portions is removed and anisotropic-dry-etching is applied to the portions from which the resist film is removed by ICP discharge. As a result, there can be simply formed on a monocrystalline silicon substrate an ink nozzle having a stepwise cross-section and further having an action, which is larger than that of a conventional ink nozzle, for aligning the directions of pressures applied from cavities to nozzles in a nozzle axis direction.